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TITLE: Solid phase selection of differentially expressed genes

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Competitive hybridization between the labeled DNA strands derived from the plurality of cells or tissues is carried out by applying equal quantities of the labeled DNA strands from each such source to the microparticles loaded with the reference DNA population in a conventional hybridization reaction. The particular amounts of labeled DNA strands added to the competitive hybridization reaction vary widely depending on the embodiment of the invention. Factors influencing the selection of such amounts include the quantity of microparticles used, the type of microparticles used, the loading of reference DNA strands on the microparticles, the complexity of the populations of labeled DNA strands, and the like. Hybridization is competitive in that differently labeled DNA strands with identical, or substantially identical, sequences compete to hybridize to the same complementary reference DNA strands. The competitive hybridization conditions are selected so that the proportion of labeled DNA strands forming duplexes with complementary reference DNA strands reflects, and preferably is directly proportional to, the amount of that DNA strand in its population in comparison with the amount of the competing DNA strands of identical sequence in their respective populations. Thus, if a first and second differently labeled DNA strands

determine duplex stability to very abstracts data.

with identical
sequence are competing for hybridization with a
complementary reference DNA
strand such that the first labeled DNA strand is at a
concentration of 1
ng/.mu.l and the second labeled DNA strand is at a
concentration of 2 ng/.mu.l,
then at equilibrium it is expected that one third of the
duplexes formed with
the reference DNA would include first labeled DNA strands
and two thirds of the
duplexes would include second labeled DNA strands.
Guidance for selecting
hybridization conditions is provided in many references,
including Keller and
Manak, (cited above); Wetmur, (cited above); Hames et al,
editors, Nucleic Acid
Hybridization: A Practical Approach (IRL Press, Oxford,
1985); and the like.